Maid Labs Technologies

EE-400

User Manual

Event Encoder

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Last Revision February 2013

Registration

Thank you for purchasing the EE-400. Please complete and return the registration form.

The internal software for the products manufactured by Maid Labs Technologies can be updated easily. By registering this software you will be able to enjoy the majority of upgrades we will make over the years in firmware, provided that your hardware is compatible. To access the updates, you must provide the following information (make a photocopy of this page) fill the form below and then return it to us via mail or fax, or simply fill out the registration section on our website www.maidlabs.com

Our services and guarantees are only available for registered products. If you have several, please register them all.

Name: _____

Email : _____

Organization : _____

Address : _____

City : _____

Province/State : _____

Postal Code: _____

Name of Product : _____

Serial Number : _____

Date of purchase : _____

Warranty

Municipal And Industrial Data Labs inc. (hereinafter called "MAID Labs") states the following express warranty for any new Maid Labs product, sold by an authorized Maid Labs representative.

MAID Labs guarantees that this product is free, under normal use and maintenance, of all manufacturing defects and is subject to the following terms and conditions:

1. To obtain warranty service:
   (a) The product registration was made within 7 (seven) days from the date of purchase.
   (b) The registration form must be completed.
   (c) The product must be shipped to Maid Labs or to an approved maintenance and repair service center for maintenance. Shipping is at customer's expense.

2. Limitations: This warranty does not apply to:
   (a) Repair or replacement of all cabinets, batteries, connecting wires, antennas and accessories.
   (b) Any defect or repair as a result of abuse, neglect, inadequate care and/or misuse.
   (c) Any defect or repair due to failure to follow the recommendations in the user manual.
   (d) Any modification, adjustment or repair to Maid Labs products by any other company other than Maid Labs authorized maintenance and repair centers.
   (e) All Maid Labs products, whose serial number has been damaged, altered or removed.
   (f) The maintenance, cleaning or periodic verifications.
   (g) All Maid Labs products that are not the property of the original owner.
   (h) Products purchased from a bankrupt, insolvent or non-approved representative.
   (i) Any damages caused by fire, flood, lightning, power surges or other events beyond the control of Maid Labs (acts of God).
   (j) The warranty does not cover the elimination of static or electrical interference, adjustments or costs of labor associated with removal or reinstallation of the unit for repair.
   (k) The warranty does not cover damage caused by high humidity, water or leaking batteries.

3. If a Maid Labs product is defective under applied conditions, necessary repairs will be performed, at no additional cost, for parts and labor when Maid Labs recognizes that such defects are caused by materials or manufacturing.

4. This warranty constitutes the entire express warranty given by Maid Labs for Maid Labs products. No representative or service maintenance employee is authorized to extend this warranty on behalf of Maid Labs

5. Since each installation may incorporate malfunctions, preventing Maid Labs from ensuring the smooth operation of its devices in all circumstances, Maid Labs will not refund nor exchange the instruments that were caused by connections to any problematic installation.

6. The warranty period is one year on parts and labor from the date of purchase.

7. LIMITATION OF DAMAGES: To the extent permitted by applicable law, under no circumstances is MAID Labs or its affiliates liable to you, to a user or a third party for any indirect, special, consequential, or punitive damages of any kind whether in contract or civil, including but not limited to, personal injury, loss of revenue, loss of goodwill, loss of business opportunities, loss of data, whatever may have been the predictability of such damages. And in no case may the total responsibility of Maid Labs or its affiliates exceed the equipment purchase price received from you, from a user or from a third party, regardless of the laws by which the cause of action was brought. The foregoing does not affect your territory's statutory rights.

At Maid Labs Technologies, we have made every effort to write a user manual that is easy to use and understand. However, it is possible that errors may occur in spite of our efforts, or that recent hardware or software upgrades might not be in this manual. We strongly suggest verifying if a new version of the manual and firmware are available on our website www.maidlabs.com

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Contacts

MAID Labs inc.
944, André-Liné, Granby, Quebec, Canada, J2J 1N2, **T** 450-375-2144

Web site : www.maidlabs.com Email : info@maidlabs.com

Product Application

Unless otherwise specified, this manual contains the information required to install, properly operate and maintain the EE-400 device and its accessories.

Product Description

The EE-400 is an event encoder that can run on batteries for several months. Each digital recording is time stamped. The unit can store several million enteries over a period of several years

The download is via a USB key that can be used to change the device settings or to update its internal software.

The backlit display lets you view each current event as well as stored events.

Options / Accessories

Power supply 120V - 12 VDC 2A (MLPS2)
Resistive Level sensor (MLSNR)
Check Valve Open sensor (MLDOC)

Use and Maintenance

Environmental Conditions

It is the user's responsibility to ensure that this product is not exposed to an environment for which it is not designed. These conditions may include a range of extreme operating temperatures, extreme humidity, vibration or abnormal shock, extended submersion or potentially explosive atmospheres.

Cleaning

If the sensor measurements are not what they should be, this can be caused by fouling of the sensors. Periodic cleaning is recommended. It is important to follow the sensors' manufacturer's recommendations.

Electrical Conditions

Each Maid Labs product is designed to operate correctly in a specific range of electrical conditions. The product label identifies the main parameters of connection. All entries are designed to resist reverse polarity, as well as higher voltage to a certain extent. It is the user's responsibility to ensure that all electrical connections are made to the products in accordance with the recommendations of MAID Labs and the local electrical code. **The user should read this manual before connecting the device.**

Power and Batteries

This product can work with internal alkaline batteries size C and a 12 to 24 VDC power supply. The version of EE-400 with touch buttons and the blue screen (serial number 120XXX (where XXX represents the serial numbers) use standard non-rechargeable batteries. **Rechargeable batteries are required with an external power supply for the EE-400 with a capacitive keyboard (not touch) and black LCD screen with serial number beginning with 111XXX (where XXX represents the serial numbers).**

DO NOT INSTALL NON RECHARGEABLE BATTERIES INTO A DEVICE THAT CHARGES BATTERIES, AN EXPLOSION MAY RESULT. All types of batteries may leak, and this could cause damage not covered by warranty.

The serial number label indicates if external power or rechargeable batteries are required.

Operating time on batteries

The instrument will work several days on batteries, allowing the user to download its data and calibrate the instrument. Each time the device is activated by the user, whether to access the menus, transfer the data to the USB or update the internal software of the instrument, the energy required can reach up to 400 times the normal energy consumption. These actions quickly deplete the life of the batteries.

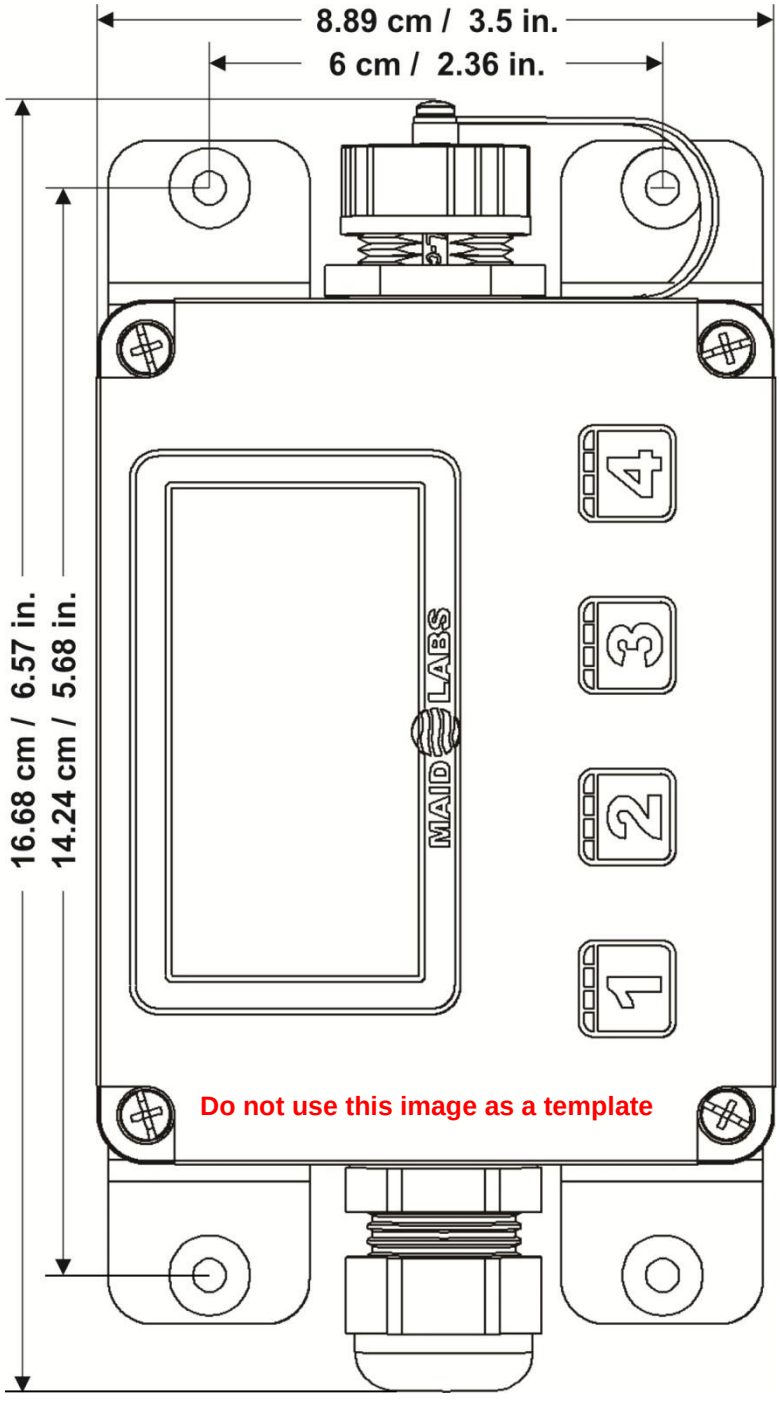
Installation

The EE-400 is not waterproof. Avoid placing it in locations where liquids could fall on it or condensation could occur. Damage caused by water or excessive humidity voids the warranty.

A desiccant bag is placed inside the instrument in order to minimize or delay damage related to humidity which may affect all electronic products. When you open the case to change the batteries, be sure to replace the desiccant bag. If you think it is inefficient, you can order additional ones from MAID Labs.

The instrument must be placed in a location where there is no risk of being hit or dropped.

Dimensions



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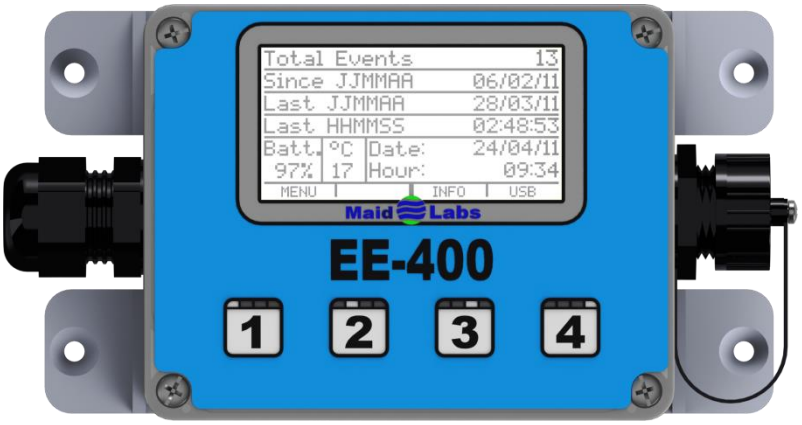
When installating the instrument, provide enough space at the right of the device for the insertion of the USB key.

If a pressure sensor with pressure regulator is connected to the analog input, avoid bending the probe cable. If this happens, provide more space to the left of the instrument.

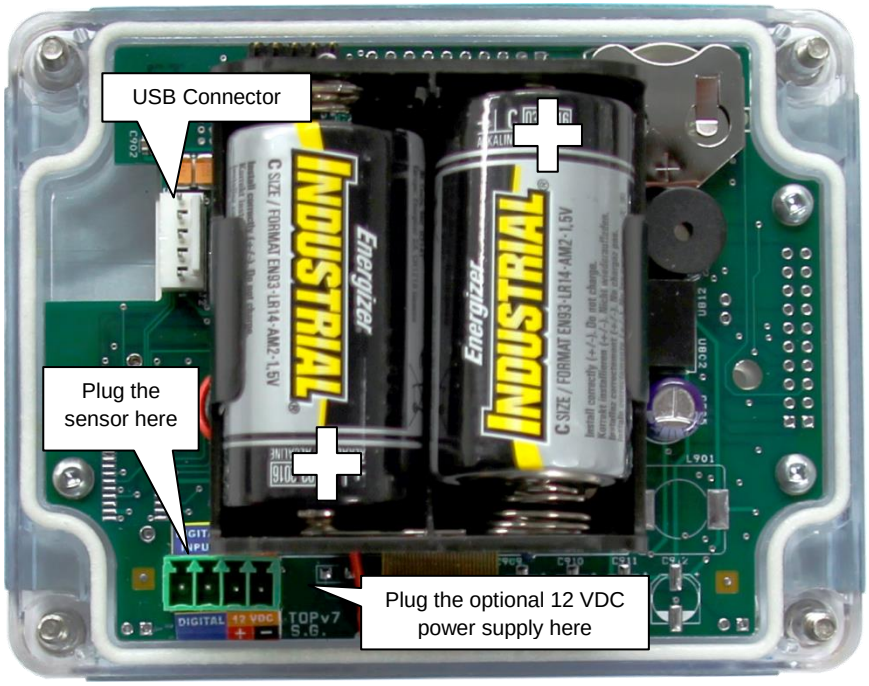
Height 2.19 in. (5.5 cm), Width 3.5 in. (8.9 cm)

Length 6.5 in. (16.7 cm), Height 2.19 in. (5.5 cm)



Length 6.5 in. (16.7 cm), Width 3.5 in. (8.9 cm)

Connections



In the latest version of the EE-400, the 12 VDC external power supply, batteries, the connection with the USB connector and the sensor connector (float or otherwise) are all on the PCB 6 layers tropicalized.

The water-resistant connector keeps its protective properties when a single cable passes through it. To keep the box sealed when using the external 12 VDC, remember to add silicone or other similar product.

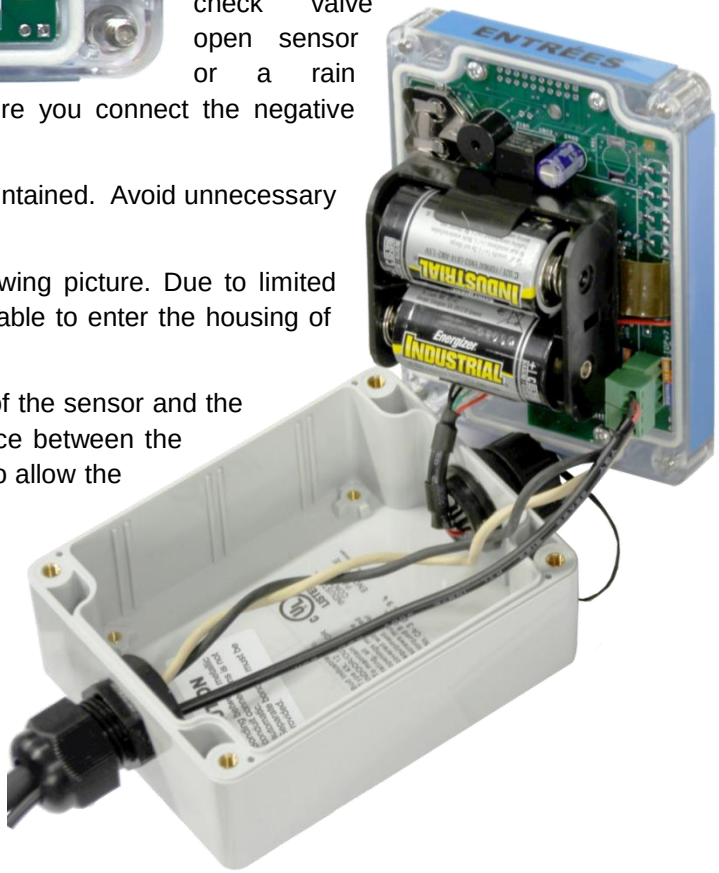
The digital input is commonly used for installing a digital sensor, like a float, a check valve open sensor or a rain gauge. If an external 12 VDC power is used, make sure you connect the negative connection to the far right of the connector.

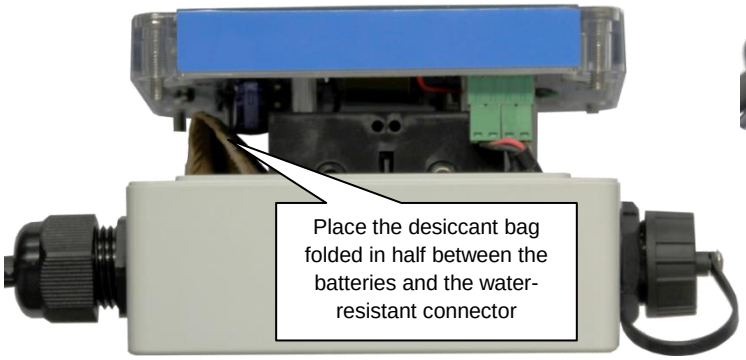
The USB connector cable is relatively short and is well maintained. Avoid unnecessary force when changing batteries.

Open the case of EE-400 as you can see it in the following picture. Due to limited space, do not allow the protective sheath of the sensor cable to enter the housing of the EE-400.

If the external 12 VDC is used, make sure that the wires of the sensor and the power does not overlap when closing the case. The space between the batteries and the bottom of the case has been calculated to allow the height of only one wire.

Place a folded desiccant bag near the sensor connector before closing the case and make sure the seal is clean before closing the lid.





120VAC/12 VDC external power

Use an external power supply MLPS2 (120VAC/12VDC 2A) only on EE-400 designed to operate with external power (see *Power and Batteries*, p. 6). Check the polarity of wires before connecting it.

Digital input

The digital input is in a dry contact format. Meaning that the contact provided by the sensor must be closed or open, but without current, i.e. Relay contacts or float switch. The instrument generates low voltage in one of the two connection wires while the other is the return. When the instrument detects its own power, the contact is closed.

Sensors can be floats, opening valve sensors, relays or any type of equipment generating a dry contact, provided that the input frequency does not exceed 10 cycles per second (10 Hz).

Instrument start up

When the instrument is powered by adequately charged batteries or external power, the instrument automatically saves its input state changes or values, even if the display is off.

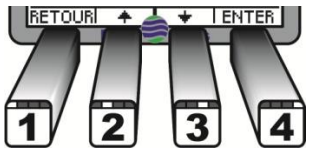
If the unit runs on batteries only, the display power downs to minimize the energy consumed by the device. The backlight turns on when the keyboard is activated and turns off after a few seconds of inactivity (see *Display* p.12), independently or whether the device is battery powered or AC powered.

To turn on the screen of a battery-operated device

If **1234** appears at the bottom of the screen, with a bare finger, press them one at a time in order to unlock the screen. If the instrument is "asleep", press any button for 2 seconds to wake it up.

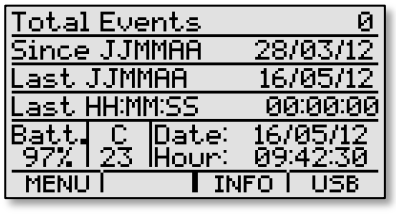
The menus

The contextual menu



The keys of the instrument use a tactile keyboard. Do not press more than one key at a time and let ½ seconds between each action, except to turn on the screen. Usage of the buttons depends on the displayed screen.

Main screen



Total Events shows the number of state changes of the digital input, such as the number of events.

Since DDMMYY indicates the date of the first event recorded since the last cumulative reset.

Last DDMMYY and **Last HH:MM:SS** displays when the last event started and its duration.

Batt. 97% Represents the remaining energy in the batteries assuming that 100% would be for new alkaline batteries providing a combined voltage of 3 volts or more.

If the instrument is a model with an external power 12 VDC supply and rechargeable batteries (different than the one working only on non-rechargeable batteries), the battery indicator will change to indicate an external power supply, when it is plugged into 120 VAC.

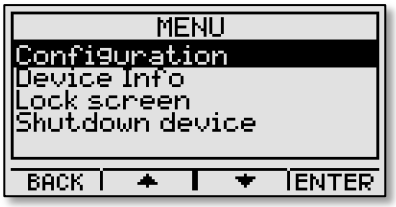
C
23

is the temperature of the device with ± 3°C precision

Date: 16/05/12
Hour: 09:42:30

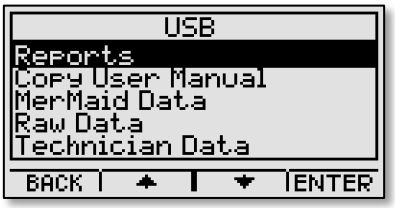
The date and time displayed should be correct when the instrument is awake. If this is not the case, press the key 1 to access MENU / Configuration / Date & Time setup, and then follow the instructions in this section (see p.11).

The MENU 1 button provides access to a menu to configure the instrument or get information on the device.

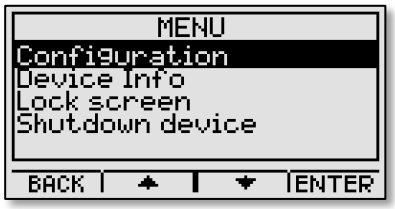


The INFO 3 button displays on-screen details of recorded events.

The USB 4 key allows you to create on the USB drive various files including one Excel™ compatible file in CSV format containing the monthly report.

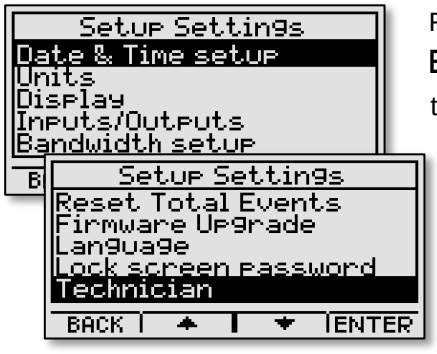


MENU 1



The MENU 1 key displays four options, which includes configuration of the device, display information about the hardware and the software of the instrument, and to display the lock screen function and the shutdown device function.

Instrument Setup



From the main screen, press the MENU 1 key to access the menu and then ENTER 4 to reach the configuration menu. This allows you to change all the items listed below. Browse the menu with keys 2 and 3 then press ENTER 4 to take action. Once the action is completed, press BACK 1 to return to the Setup menu. The list of submenus is longer than what is displayed on the screen.

You can use the **MaidDevices Configurator** software supplied with the instrument for configuration. It facilitates and speeds up the configuration (see *MaidDevices Configuration Software* p.17**Erreur ! Signet non défini.**).

Date & Time setup

This menu displays the time, date, and the difference with Universal Time (UTC), also known as Greenwich Mean Time (GMT).

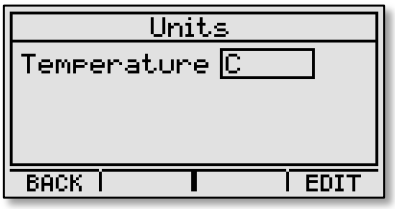
For time or date modification, select the desired field with the arrows 2 or 3, then press the ENTER 4 key. A cursor appears under the first number that can be changed. Keys 2 and 3 changes the value and / or NEXT 4 to move to the next variable.

The data are recorded in Greenwich Mean Time (GMT) and then adjusted to local time when displaying, creating files and reports. This prevents data loss caused by changes in daylight savings time to standard time and vice versa.

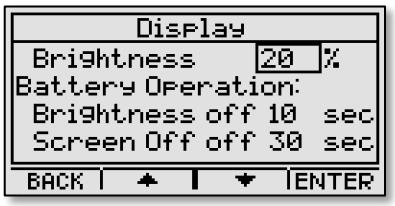
Date or time changes can cause data loss when the time or date entered is turned back. When this happens, data will be lost after the change. In this case, the following message will appear Data may be lost. Continue? Editing (GMT) does not cause data loss.

Units

In the EE-400 only the temperature unit can be selected between Fahrenheit (F) or Celsius (C).



Display

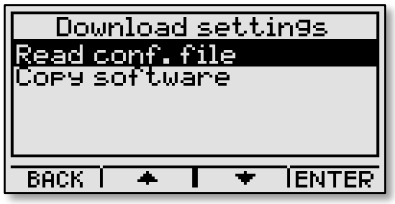


Besides the use of the USB key, the backlight of the screen is the largest energy consumer of the instrument.

For maximum battery operation, press the ENTER 4 button to select the brightness setting, then 2 or 3 to vary from 0% (off) to 100%, 20% increments and again 4 to accept choice.

It is possible to close the backlight (brightness off) and the screen (display off) after a number of seconds specified by the user. Press the ENTER 4 key to accept the selection, 2 or 3 to change it, then 4 again to accept the choice.

Download Settings



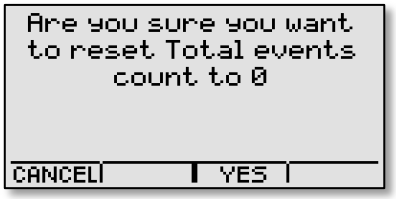
To read the file created by **MaidDevices Configurator**, select Read conf. file and ENTER 4. Follow the instructions on the screen.

Parameters can also be configured from the **MaidDevices Configurator** software. This software can be copied to a USB drive from the instrument. Simply select from the setup menu, Download settings, then Copy software, then ENTER 4. You will be asked to insert USB key in the instrument.

The compressed file **Config.zip** will be copied in the main directory of the USB. A double-click should decompress it. Clicking **Config.exe** runs the application. The configuration software explanation of the MaidDevices Configurator is on page 17**Erreur ! Signet non défini.**.

Reset Total events

This function resets the total events contained in the main screen. After selecting this function, press YES 3 to confirm deletion of data from the main screen or CANCEL 1 to return to the previous screen. To reset all the total



events of the instrument, go to the *Factory Reset* operation located on page 13**Erreur ! Signet non défini.**.

Software update

MAID Labs is constantly improving its products, especially its instruments' internal software, whether because improvements are suggested or bugs have been found, despite all the tests that have been performed on the instrument.

The latest version of firmware can be obtained from the website www.maidlabs.com for devices that have been registered.

Make sure of the reliability of the power source before beginning the start up of the instrument. If it runs on batteries and that have a capacity of less than 60%, replace them with new batteries before the start up.

If the unit is operating on external power, there should be no power interruption during the update. To reduce this risk, make sure that rechargeable batteries have a minimum capacity of 60%. This can be checked on the main display by disconnecting the instrument from the external source. **Never use alkaline batteries in an instrument made to work with rechargeable batteries. They could cause damage to the instrument and people.**

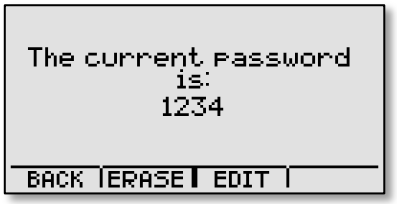
After selecting Software Update, insert a USB key that contains the file **EE400.hex** in the root directory. As soon as this file is detected, the program begins.

The software is first copied into the permanent memory inside the instrument, then the update itself begins. A percentage indicates the progress of each of these steps. The instrument reboots when everything is finished.

Language

The instrument can operate in either English or French. Press 2 or 3 to select the language and APPLY 4 to accept the displayed language.

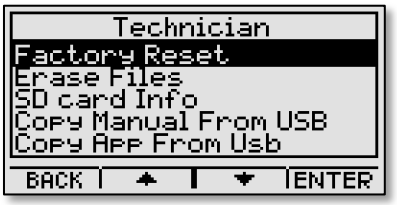
Lock screen password setup



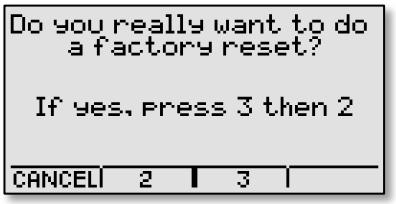
By default, if no lock screen password has been set, simply press 1234 to have full access to the menus. To create a custom lock screen password, press EDIT 3 and enter a 5 digit code between 1 and 4.

Technician

The technician menu allows to perform operations and access functions that are normally reserved for an experienced technician. Attention, in this menu, there are functions that could completely erase the memory of the instrument.



Factory Reset



This resets the device to ther factory default settings. If this is what you want, press in order the keys 3 and 2. The memory will be empty after execution. This is equivalent to formating the drive of a computer.

Erase Files

This feature allows you to select the file to delete from MicroSD card.

Assert is a file for tracking bugs if necessary. **Digital**, **TempBatt** and **Analog** files are explained in the *Raw Data* section (see p. 17).

When the file for delete is selected, press ENTER 4 to access the next screen, then OK 2 to confirm.

SD Card Info

This function verifies the amount of memory contained in the internal memory and the available space.

With 2 GB of memory, it would be very surprising to run out of memory during the life of the instrument, which is more than 10 years.

Copy Manual From USB

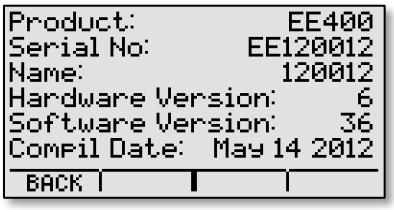
This feature allows you to update the PDF user manual recorded in the internal memory of the instrument, which could be necessary when major updates of the firmware occur.

Copy App From USB

This feature allows you to update the application MaidDevices Configurator in the internal memory of the instrument, which is necessary when major updates of the firmware occur.

Device Info

From the main screen, press the MENU 1 key to access the menu, the arrow 3 and ENTER 4 to display the product information.



Locking the screen

From the main menu, you can allow restricted access to the device. By default, if no lock screen password has been set, simply press 1234 to have full access to the menus. If the lock screen password has been configured (see *Lock screen password setup*, p. 13), you just enter this password with the device keys. The unit automatically locks the screen after 30 seconds, or as defined by the user.

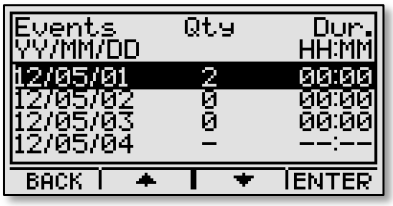
Shutdown device

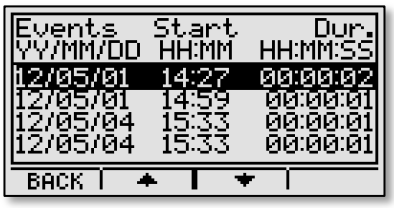
This procedure is recommended when maintenance is done on the device for example battery change. This avoids the possibility of recent data loss that would have not yet been stored in the device. This function causes a complete shutdown of the unit. To return to normal operation, simply remove the power supply including batteries and reconnect after a few seconds.

INFO 3

From the main screen, press on key INFO 3. The current month is automatically preselected. Press MONTH 2 or YEAR 3 to select the month or year to change, and then 2 and 3 to vary among months and years for which data are recorded, and press ENTER 4.

The next window shows, for the desired month, the amount and duration of events each day of the month. To view details of each event of the selected month, choose a day by pressing the arrow keys 2 and 3 then press ENTER 4 to display the detailed report.



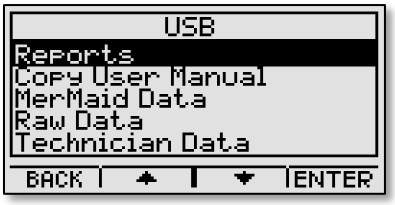


The detailed report shows the date and time the event started, followed by the period of the event (Dur.) in Hour: Minute: Second.

If no day is selected, the first event of the month will be displayed, as well as the following events. In all cases, press 2 and 3 to scroll through all the events of the selected month.

USB 4

To copy event reports, user manual, data for the MerMaid software, raw data, or technician data, on the USB key, from the main screen, press the USB 4 button.



Use a USB key formatted in FAT16 or FAT32. The amount of files on the key influences the time to copy files. It is ideal to reserve a USB key for the downloads of Maid Labs devices.

Insert a USB key when the following message appears.

When the transfer is complete, a message that you can remove the key will be displayed.

Monthly report

The monthly events report will be on the USB, in the subdirectory *Monthly Reports*, found under the directory with the name given to the instrument or its serial number in the root directory. See *Device name* on page 17. A file is created for each month of operation of the instrument, unless all data have been deleted using the *Technician* menu (see p. 13).

Monthly reports are compatible with Excel in CSV format. If Excel is installed on the computer, the monthly reports will load automatically. The filename is composed of an identifier or the name (see p.17) or the serial number, year and month for which it is created.

In the example of the monthly report on the next page, column width has been adjusted and titles centered.

If the EE-400 is not installed on the first day of the month, N/A appears on the lines related to these dates.

	A	B	C	D
1	Site: Station EE400	02-2011	Events	
2	Date	Duration	Quantity	
3	1	N/A	N/A	
4	2	N/A	N/A	
5	3	N/A	N/A	
6	4	N/A	N/A	
7	5	N/A	N/A	
8	6	N/A	N/A	
9	7	00:00	1	
10	8	03:54	3	
11	9	00:00	2	
12	10	00:00	2	
13	11	01:14	1	
14	12	00:00	1	
15	13	00:00	1	
16	14	00:00	2	
17	15	00:00	1	
18	16	00:00	1	
19				
20				
35	Date	From	To	Duration
36	7	07:45:03	07:45:18	00:00:15
37	8	10:21:23	12:22:22	02:00:59
38	8	13:03:25	14:23:25	01:20:00
39	8	15:02:01	15:35:13	00:33:12
40	9	14:31:14	14:31:35	00:00:21
41	9	15:00:23	15:00:26	00:00:03
42	10	09:12:11	09:12:16	00:00:05
43	10	09:41:04	09:41:14	00:00:10
44	11	10:01:16	11:15:25	01:14:09
45	12	10:25:49	10:25:51	00:00:02
46	13	10:15:00	10:15:15	00:00:15
47	14	09:31:59	09:32:05	00:00:06
48	14	09:32:10	09:32:15	00:00:05
49	15	14:21:15	14:21:44	00:00:29

Station EE400_2011-02

For the current month, the dates following the creation of the monthly report are not posted. This and the file creation date are two ways of knowing when the monthly report was made.

Each event detail is shown starting from line 36 of the report when Excel is opened.

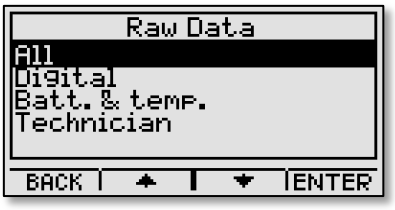
Copy User Manual

This will copy the PDF version of the user manual recorded in the internal memory of the instrument to a USB key. This may be necessary for major updates of the internal software.

MerMaid Data

This data is added to the subfolder named MLDATA. This contains the monthly files of the device (serial #-MM-YY.mldata) visible to the MerMaid software only. Files already present on the key will not be copied except the file for the current month.

Raw data



Raw data is stored in a simple format within a text file. For each selection, the entire file may be copied the last week or the last month.

The recorded data are in Universal Time (UTC). *Date & Time setup* section (see p. 11) explains how to see the difference with the local time (GMT).

All in the menu allows to copy the digital data, battery voltage, temperature of the instrument and the analog input on the USB.

By selecting Digital the **Digital.txt** file will be created. This is the list of all events recorded in the following digital format: **2011-02-10 15:57:44.666 1**. The last "**1**" means that the contact is open and "**0**" as the contact is closed. You can see more than one **1** or **0** because the input state is saved when starting the instrument, as well as batteries changed.

By selecting Batt. & temp., **TempBatt.txt** file is created. It contains a record of temperatures and batteries capacities stored every 2 seconds in the following format: **2011-02-10 14:36:11 26.50 2.86**. "**26.50** " represents the temperature as "**2.86** " represents the battery voltage in volts.

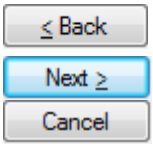
MaidDevices Configurator Software

Read the *Download Settings* section on page 12 to learn how to copy the configuration software to a USB key.

MaidDevices Configurator allows the setup of the following instruments:

- **EE-400** Event encoder
- **FlowMaid** level monitor and open chanel flowmeter
- **PressureMaid** tap water pressure monitor
- **LevelMaid** level monitor through Internet
- **SensorMaid** standard datalogger
- **Volucalc** volumetric lift station flowmeter & energy analyzer

At any time, in the configuration software, three actions are permitted:

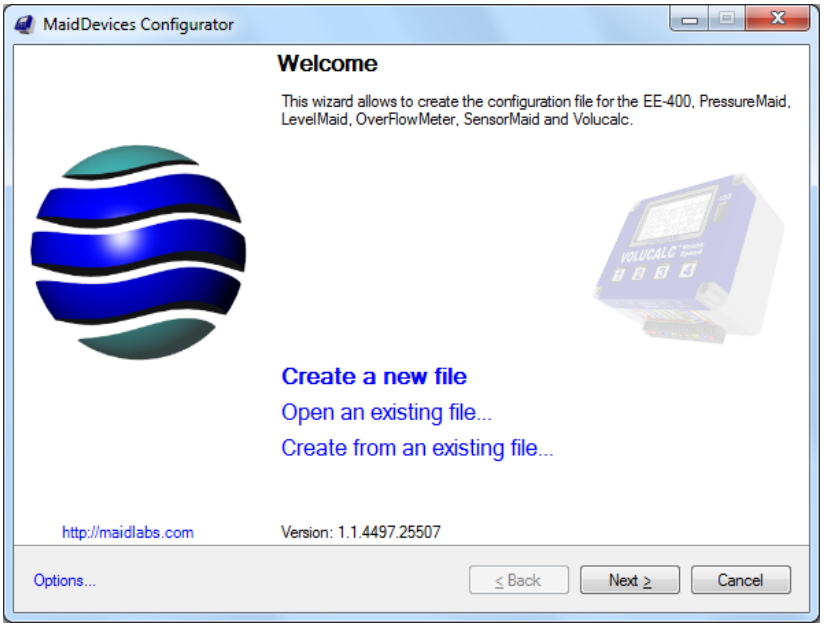


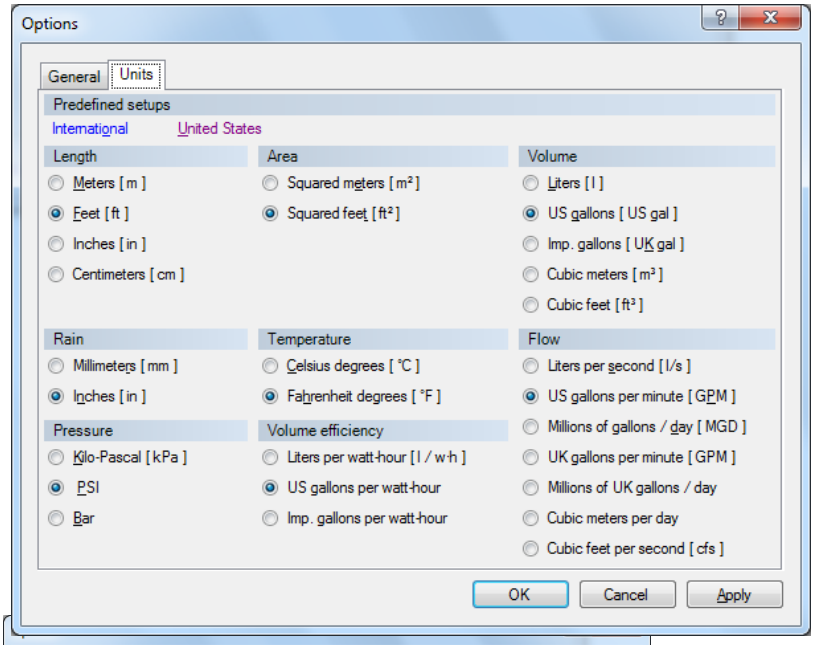
Returns to the previous window without saving the values of the current window.

Allows you to continue with the configuration to the next window.

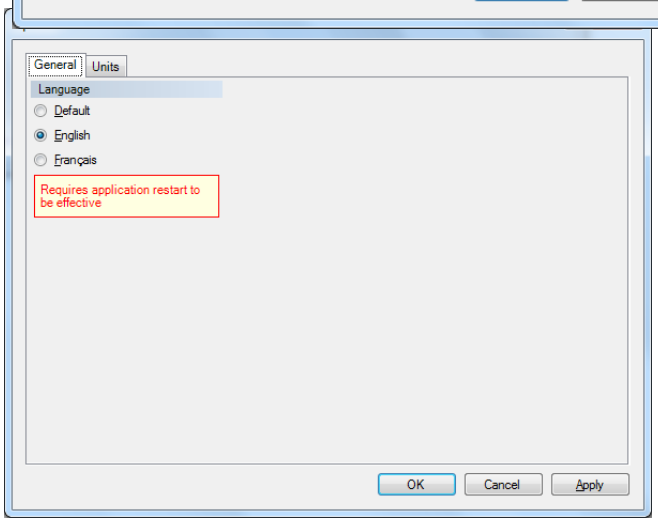
Closes the MaidDevices configuration software.

The Configurator allows **Create a new file**, **Open an existing file** if the configuration of the device has already been performed or **Create from an existing file**, which allows you to enter the parameters of a device already created. By default, the Configurator starts the process of creating a new file when the button is selected.

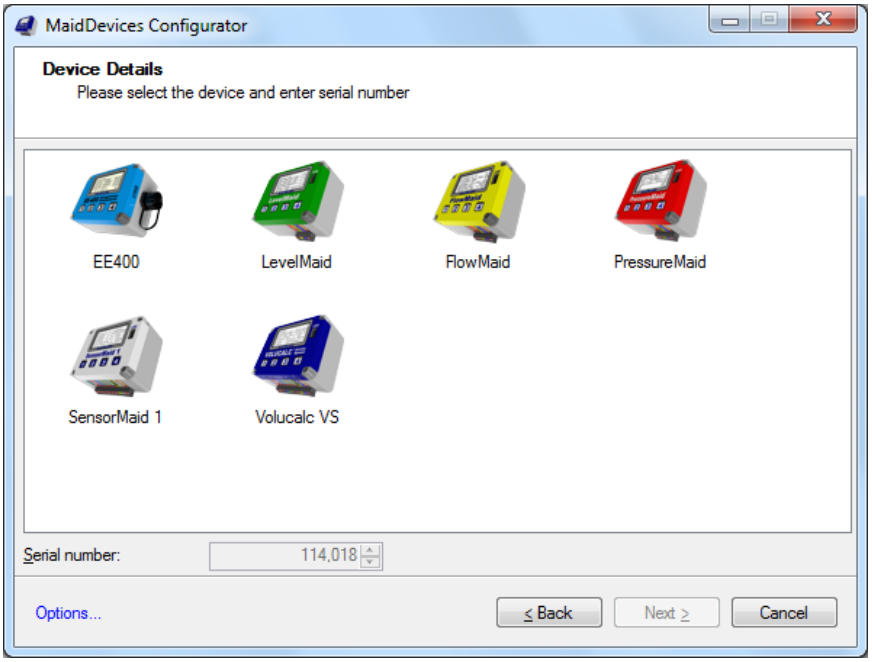




For a first configuration, you may select the **Options** link on the bottom left corner of the window. Two menus are available: **General** and **Units**. By default, it will open on the **Units** menu. If you select **United States**, the standard units seen in the USA will immediatly appear. However, it is possible to change them if needed. Press the **Apply** button when the units selection is complete.



The **General** menu helps you choose the desired language. The configurator will appear in the language of your computer (**Default**) but it is possible to change to **French** or **English** at any time.



Click on the icon of the desired device. In this case "EE400". Enter the serial number of the device. This number is on a label underneath the device and also appears on the *Device Info* screen (see p. 14). If the serial number is incorrect, the instrument will not be able to read the configuration intended for it.

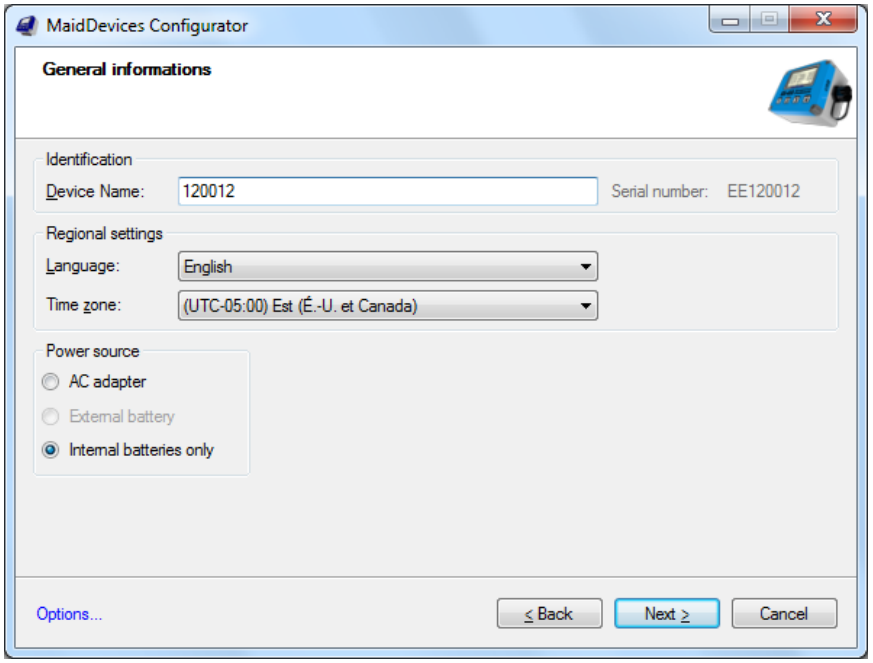
The configuration file created by MaidDevices Configurator in the main directory of the USB drive is called EExxxx, where xxxx is the serial number of the instrument.

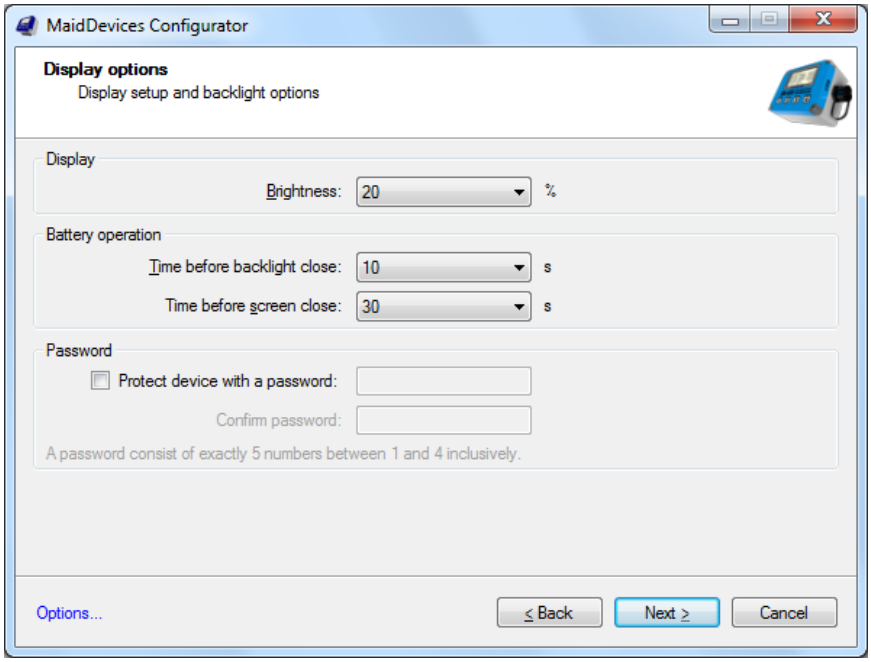
The **Device Name**: will be used to identify data files copied to the USB drive. This is necessary when a key is used for multiple devices.

Language: is the one for the operation and the device display. French or English.

The **Time zone**: is automatically adjusted to that of the computer that is running MaidDevices Configurator.

The **Power Source** section allows to select the type of device power: AC adapter or external battery.

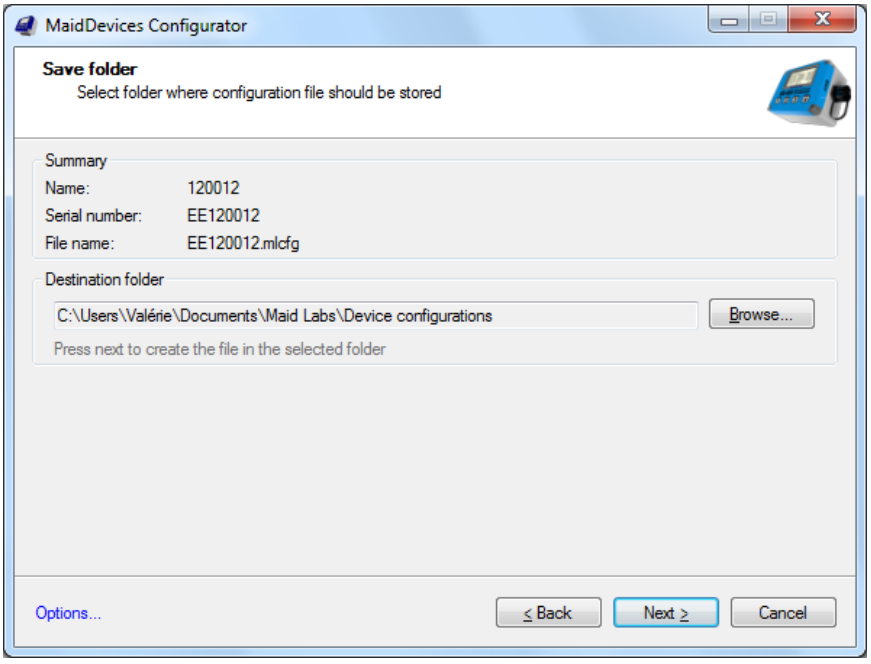




The **Display (backlight)** can be adjusted between 0% and 100% of brightness in increments of 20%. The default value is 20%.

To maximize the operating time on the battery, the **Time before backlight close** function can be selected: where the choices are **0**, **10** and **30** seconds, while those for the **Time before screen close** function: are **10**, **30**, **60** or **300** seconds.

Creating a lock screen password is also possible at this point in the software. Just create a code of 5 numbers between 1 and 4, as explained in the *Lock screen password setup* section (p. 13).



Choose a destination folder and press Next > to complete the configuration of the device. For the unit to read the configuration file, the .mlcfg must be in the root directory of the USB key and the file name should not change.

Accessories

Stainless steel bracket for Maid Labs Devices (90 angle) (MLSUP90)

The stainless steel bracket with a 90 degree angle is ideal for installation in manhole, where a vertical view is desired.

Holes on the sides of the mounting plate are used to attach the probe, without straining the sealed thread clamp.

If it becomes necessary to remove the instrument from its base, simply remove the bolts (not screwed), then slide the instrument a few inches.

Stainless steel bracket for Maid Labs Devices (45 angle) (MLSUP45)

Sometimes it is not possible to place the instrument at eye level. The stainless steel bracket with a 45 degree angle is best used when the position of the instrument is too low to permit easy reading.

Holes on the sides of the mounting plate are used to attach the probe, without straining the sealed thread clamp.

If it becomes necessary to remove the instrument from its base, simply remove the bolts (not screwed), then slide the instrument a few inches

Installing 45 and 90 degrees angle bracket

Since the instrument can be positioned to face toward the back or front of the bracket, the holes for inserting the bolts to lock up the instrument have not been drilled. It's up to you to do so before installing the bracket. Two stainless steel bolts 1/4" are included.

Choose a location easily accessible and secure the bracket through the two holes provided. They are 7 inches apart and have a diameter of 0.25 inch.

The sensor cable should be attached to the side of the bracket in order to limit the force exerted on the sealed thread clamp.

The remaining length of cable between the waterproof connector and cable clamp helps removal of the instrument from it position when changing batteries or other handling.

Resistive Level sensor (MLSNR)

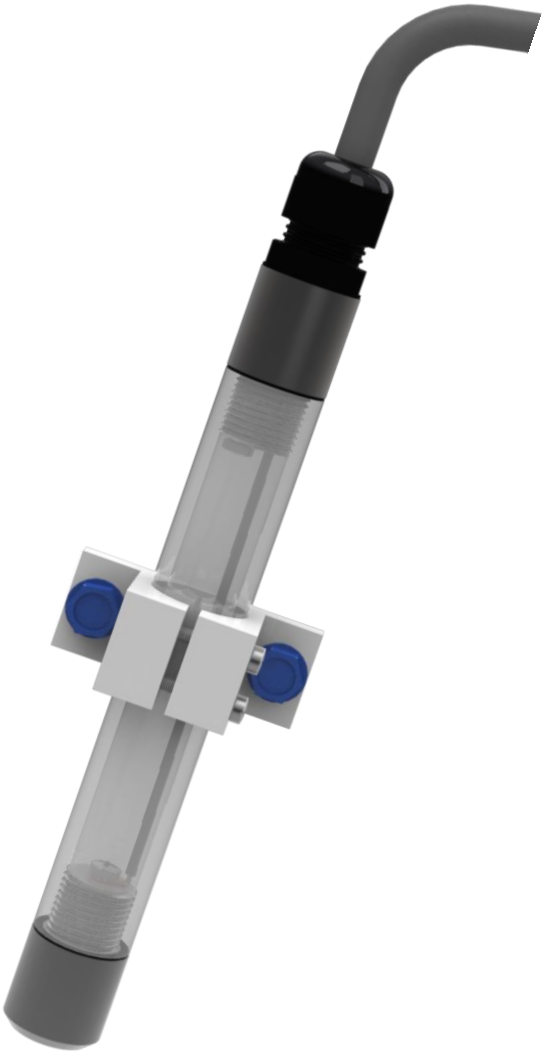
The EE-400 is able to detect a change in resistance as small as that produced between two electrodes placed in clean water which is a poor conductor. It is therefore evident that detection will always work in water found in lift stations and manholes.

The Resistive Level sensor from Maid Labs was designed to be easily installed and maintained. Its transparent, extremely resistant polycarbonate tube allows the verification of the products seal and the detection of corrosion.

Large corrosive resistant stainless steel electrodes can be used in very toxic enviroments. Good size electrodes are of stainless steel with good resistance to corrosion that can be caused by very toxic environment where they can be used.

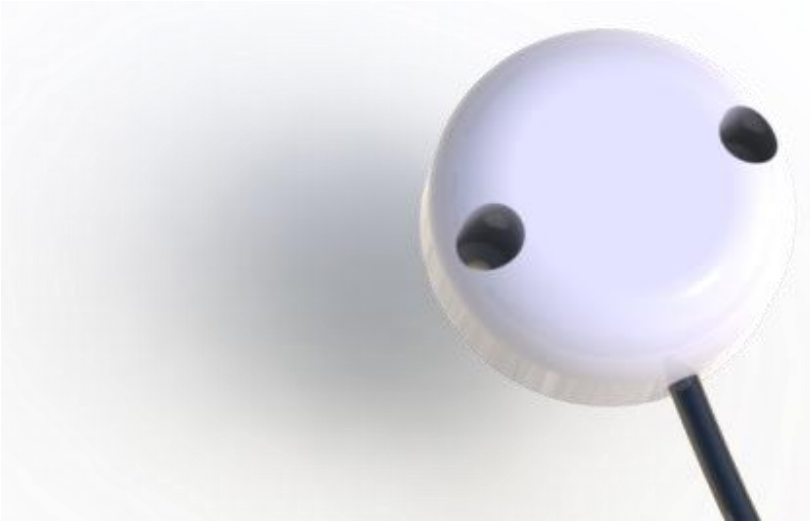
A desiccant bag is inserted into the tube to reduce moisture.

Depending on the end use the probe can be installed vertically or horizontally. The support can be placed anywhere along the length of the tube



Check Valve Open sensor

The submersible check valve open sensor allows transmission of a dry contact to an event recorder such as the EE-400. Easy to install, the mercury free system generates a contact change of state with only two degrees of tilt.



- Operation : -40° to 99°C and submersible.
- Capacity : 100,000,000 state changes.
- A tilt change of 2 degrees is sufficient for a state change.
- Dry contact type C of 1.0A Max.
- Maximum voltage: 6-24Vdc.
- Contact resistance: 3 Ohms Max. at 10° tilt
- Standard submersible cable of 7.6 meters/25 feet (longer on demand).
- Can withstand a drop of 2 meters.
- Dimensions : diameter of 3.6” x 1.5” of height
- Weight without cable : 0.3 lb
- 1 year warranty

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